

may cause dissociation of temperature sense in the area on the dorsum of the hand—without loss to cotton-wool. Return of motor function begins with the muscles which first receive their supply below the lesion. The return is earlier the nearer the lesion to the periphery. Trophic ulcers occur only after trauma. Their repair appears to be no different than in other parts.

A Study of Exstrophy of the Bladder.—STEVENS (*Surg., Gynec. and Obst.*, 1916, xxiii, 702) presents a study of the literature and reports a case five years after implantation of the ureters into the rectum. He reported the patient at work, in perfect health, and changed from a wretched, dejected, lonely boy to a bright and happy lad with a real interest in life. Stevens emphasizes the wisdom of a careful preliminary examination of the kidneys before any operation is undertaken on a case of exstrophy of the bladder. The operation is clearly indicated if there be no severe renal infection. Methods which effect no control of the urine offer but little comfort to the patient. The simpler procedures that do provide a sphincter are to be preferred. The newer methods which form an extra-intestinal, perineal channel, lined with epithelium and controlled by the sphincter ani, have not been sufficiently tested clinically. The author believes that uretero-intestinal anastomoses offer the exstrophy patients the best outlook at the present time. The subject is intimately associated with bladder exclusion for other ailments, and the problem of control of ascending infection is deserving of all the experimental and clinical work being done. Bergenheim's operation is the best for this condition. It consists essentially of the independent extraperitoneal implantation of the ureters, each with a rosette of bladder-wall, into the rectum, with removal of the bladder. Preservation of the ureteral sphincter is worth while, whether it acts as a valve or sphincter or whether its preservation merely offers a more circuitous and less likely route for ascending infection to follow in order to reach the ureteral lymphatics.

Direct Neurotization of Paralyzed Muscles.—STEINDLER (*Am. Jour. Orthop. Surg.*, 1916, xiv, 707) studied experimentally on dogs the Heineke idea of the possibility of implanting peripheral nerves directly into paralyzed muscles. Heineke maintained that motor impulses can in this way be directly transmitted to the muscle. A further step was taken by Erlacher in maintaining the possibility of neutralizing the paralyzed muscles by means of direct contact between normal and paralyzed muscle, and without the implantation of the peripheral nerve. The author found that direct neurotization, in the sense of Heineke and Erlacher, is indeed possible. The natural limits of physiological regeneration allows motor nerve, directly implanted into paralyzed muscle tissue, to establish by regeneration the entire chain of neurometer connections. From the experiments it appears that this regeneration becomes complete in from eight to ten weeks after the implantation. In close succession to the regeneration of nerve tissue the muscle tissue also regenerates, and this becomes manifest in the reappearance of the normal contours of the fibers and the normal striations. Physiological test of the reneurotized muscles also show that regeneration of the muscle takes place centrifugally from the

point of implantation. In none of the experiments was there observed in a normal muscle any inclination to take on additional nerve supply, though ample occasion was furnished for this effect. For this reason Steindler is inclined to be rather skeptical about the question of hyperneurotization. Apparently totally paralyzed muscles in infantile paralysis were regularly found to contain a variable number of perfectly normal muscle fibers and a considerable amount of nervous elements. A definite statement concerning the clinical application of these facts to cases of infantile and other paralysis should be withheld until one or two more points are more clearly understood.

THERAPEUTICS

UNDER THE CHARGE OF

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The Treatment of Syphilis of the Central Nervous System.—WALKER and HALLER (*Arch. Int. Med.*, 1916, xviii, 376) report 75 patients with central nervous system syphilis treated with 450 intraspinal injections of salvarsanized serum and with 350 intravenous injections of salvarsan. At first only salvarsan intravenously was used, and a few patients improved rapidly. However, in many cases little or no improvement followed from three to six injections, so these patients were then given intraspinal salvarsanized serum in conjunction with the salvarsan, and they improved rapidly under the combined treatment (Swift-Ellis method). As the intraspinal treatment seemed to reinforce the salvarsan the authors desired to determine what results would follow the intraspinal method alone. For this method they selected patients with a negative Wassermann reaction in the serum and with positive findings in the spinal fluid. The results from this method closely paralleled those from the double method. Therefore, the following rule has been adopted at the Peter Bent Brigham Hospital: Patients are first treated with intravenous salvarsan. If satisfactory results do not follow three or four such treatments, they are then given intraspinal salvarsanized serum in conjunction with intravenous salvarsan. Those who have a negative reaction in the serum are given only intraspinal salvarsanized serum. To thirteen patients were given five or more intravenous injections of salvarsan alone. Four of these patients, three with cerebrospinal syphilis and one with syphilitic meningitis, had very recent infections and were relieved of their symptoms. The spinal fluid cell count was reduced to normal in three cases, and the Wassermann reaction became negative with 1 c.c. in three cases. The remaining nine patients had older infections and they showed little or no improvement in their symptoms and no improve-